APPENDIX D

PRE-CONSTRUCTION NOTIFICATION

APPLICANT NAME, ADDRESS, AND LOCATION:

Stephen Hamilton
Nally & Hamilton Coal Corporation
P.O. Box 157
Bardstown, KY 40004
(502) 348-0084

The site is located in **Harlan County** northeast of **Black Bottom**, Kentucky, on a dirt road off of a gravel haul road off of State Route 179. The streams that will be affected are **Fugitt Creek, two Unnamed Tributaries to Fugitt Creek, Left Fork of Fugitt Creek, and an Unnamed Tributary to Left Fork of Fugitt Creek**. Approximately 3441 linear feet of perennial stream, 2576 linear feet of intermittent stream, and 928 linear feet of ephemeral stream will be impacted. The date the mining activity is expected to begin is not known. Therefore, the dates for the commencement and completion of the mitigation, is also unknown. Fugitt Creek drains into Clover Fork of Cumberland River, which flows into Martin's Fork, then into Poor Fork Cumberland River to form Cumberland River. Access to the site is via a dirt road off of a gravel haul road off of State Route 179. The location is shown on the Location Map in Section 4 and is on the **Louellen Quad** at latitude 36°55'08" and longitude 83°02'10".

A. PROJECT PURPOSE:

The purpose of this project is to recover reserves from the Highsplint, Middlesplint, and Lowsplint coal seams. Mining operations are proposed to entail contour mining and augering operations. Mitigation will be in accordance with Section 3 of this report.

B. DIRECT AND INDIRECT ADVERSE ENVIRONMENTAL EFFECT THE PROJECT WILL CAUSE:

Operations proposed by this application require that approximately 3441 linear feet of perennial, 2576 linear feet of intermittent stream, and 928 linear feet of ephemeral stream will be impacted to accommodate mining. The determination of stream type was made utilizing indicators such as biological diversity, baseline data, site-specific mapping, and physical characteristics of each stream reach. Physical characteristics included stream order, channel dimensions, topographic setting, floodplain dimensions, vegetation, and drainage area. All water flowing in the streams will be routed through a clean water diversion ditch around the fill. All runoff from the hollow fill will pass through a sediment control pond before being discharged into Fugitt Creek. At the time of the survey, Fugitt Creek in the area of the fill was flowing, due to it being classified as a perennial stream. The

Unnamed Tributary to Fugitt Creek, the headwaters of Fugitt Creek, and the Unnamed Tributary to Left Fork were not flowing due to all being intermittent streams.

To help minimize environmental impacts from this project, hollow fill #100 as approved by the DSMRE permit was removed. By deleting this fill and the associated sediment control pond, the coal company is able to avoid impacting 3149 linear feet of perennial stream. Also under minimization, Pond 2 and Pond 2A was moved upstream. By doing this, the coal company is able to avoid 1186 linear feet of perennial stream.

A Mitigation Plan is contained in this document (Section 3). The Mitigation Plan, as approved, should ensure that any adverse environmental impacts are minimal.

C. OTHER NATIONWIDE, REGIONAL GENERAL PERMITS, OR INDIVIDUAL PERMITS USED OR INTENDED TO BE USED TO AUTHORIZE ANY PART OF THE PROJECT OR ANY RELATED ACTIVITY:

AGENCY	PERMITS	TYPE
USACE	404 Water Quality	Environmental
DSMRE	Mining and Reclamation	Environmental
KDOW	NPDES	Environmental
KDOW	401 Water Quality	Environmental

USACE – United States Army Corps of Engineers, Nashville, TN 37214
DSMRE – Department of Surface Mining Reclamation Enforcement, Frankfort, KY 40601
KDOW – Kentucky Division of Water, Frankfort, KY 40601

D. IS YOUR DELINEATION OF AFFECTED SPECIAL AQUATIC SITES (RIFFLE/POOL COMPLEXES, MUSSEL BEDS, RECHARGE AREAS, WETLANDS, ETC.) ATTACHED?

YES__X__ NO____ NOT REQUIRED ____.

The project area is in Fugitt Creek. Fugitt Creek is designated by Kentucky Division of Water (KDOW) as a Cold Water Aquatic Habitat. Inside the project area, all of the stream channels have a relatively constant stream gradient. No wetlands or riffle/pool complexes were observed during a stream survey and no endangered species were found. Thus, other than the stream itself, no other special aquatic sites exist.

E. PREVIOUS AGENCY CONTACTS:

No other agency contact has been made at this time.

MITIGATION MEASURES

Under existing law the USACOE requires compensatory mitigation to replace aquatic resource functions unavoidably lost or adversely affected by authorized activities. The objective of this mitigation plan is to compensate for adverse conditions associated with the loss of 3441 linear feet of perennial stream, 2576 linear feet of intermittent stream, and 928 linear feet of ephemeral stream. To compensate, the client will construct a stream channel along the south side of hollow fill #200. This channel will be 3212 linear feet and have a grade of not less than five percent (5%). There will also be 617 linear feet from the pond to the toe of the hollow fill and 184 linear feet above the hollow fill reconstructed. Both of the intermittent sections of stream that will be impacted in Fugitt Creek will be reconstructed for a total of 1342 linear feet of intermittent stream reconstruction. The impacted sections of stream in Left Fork of Fugitt Creek (1234 linear feet) will be reconstructed. A portion (722 linear feet) of the impacted ephemeral stream will be reconstructed. We also propose to pay an in-lieu-fee of $783,762.00 (seven hundred eighty-three thousand seven hundred sixty-two dollars).

During mining, all flow will be placed into a clean water diversion ditch. Once all mining activities are completed, the stream will be restored as closely as possible to a healthy stream system. The purpose of these mitigation measures is to return stability and ecological function to the impacted stream, while also making the stream self-maintaining. The pattern, profile, and dimension data collected at the stream will be used to guide the stream restoration efforts. Natural stream channel design will be used to restore the stream. Restoration measures to be employed include stream shaping and realignment, revetments (riffles, boulder clusters, substrate, cover logs, J-hook vanes, and cross vanes), and bioengineering (re-vegetation).

During restoration efforts, in-stream habitat will be re-created as closely as possible to pre-disturbance levels. This will include reproducing as close as possible the pre-disturbance bank-full width, depth, channel sinuosity, riffle-run-pool ratio, and substrate types. The longitudinal profile (riffle/run/pool), cross sections, and pebble count data collected will be used to guide restoration efforts. A diverse in stream habitat will be achieved by using rock/log deflectors, riffles, boulder clusters, substrate (cobble and gravel), cover logs, J-hook vanes (made of large rock, logs, and/or root wads), and cross vanes (rock and log). These structures will help make the stream self maintaining and also provide a diverse habitat for aquatic organisms. During the construction phase, data sheets detailing current conditions should be referred to, to ensure that restoration efforts are being created as closely as possible to pre-disturbance conditions.

In stream restoration structures will be placed in such a way to create a self-maintaining stream. Where bends are proposed, J-hook vanes will be placed to stabilize the banks and to form a scour pool in the center portion of the channel. Placing the J-hook vanes in the stream bends will help dissipate energy during high flow situations. The vane arm sections of the J-hook vanes (near the bank) will be interlocked with no spaces in between, thus stabilizing the banks as much as possible. These structures should be

built at a 20 to 30 degree angle from the bank. The center sections of the J-hook vanes (that jut into the middle of the stream) will have gaps located in between the large rocks. These gaps will help transport sediment and improve channel capacity and sediment competence. The vane arm section of the J-hook should be one-third. Footers for these structures should be three times the protrusion height of the invert rock.

Where sections of the stream are currently straight, cross vanes will be placed to help provide pool/run habitat. These structures will decrease stream velocity and energy near the bank and increase it near the center. Cross vanes will be constructed of either logs or boulders. Logs used for these cross vanes will have a 12 to 18 inch diameter and will be at least 18 feet long. To ensure that the logs will not be washed out during high flow situations, log ends will be buried at least two feet within each bank. The logs proposed to be used in these log vanes will either be oak or hemlock. Cross vanes constructed of boulders will have footers that are three times the protrusion height of the invert rock. Bank-full levels will be approximately six inches above cross vane structures. These structures will be constructed approximately five to seven bank-full widths of each other.

Once the stream restoration efforts are complete, the riparian vegetation will be re-established. This riparian vegetation will help prevent sedimentation of the stream, keep water temperatures cool (by shading), and provide nutrients for organisms that live within the stream. Mesic-hydric and hydric shrubs will be planted between the normal flow and bank-full areas. This riparian zone will be at least 50 feet wide on both sides of the stream. During the re-vegetation process, the site will have hydro-mulch applied. The hydro-mulch will aid in the retention of water and help prevent the site from becoming excessively dry. As this mulch decays, it will also build additional topsoil.

In an effort to re-establish the riparian corridor (100 feet on either side of the stream) and increase wildlife habitat, a mix of approximately 600 stems per acre, selected from black cherry, hazelnut, flowering dogwood, red oak, rhododendron, sugar maple, tuliptree, and yellow birch will be planted along Fugitt Creek and the Unnamed Tributary to Fugitt Creek. The planting will be in accordance with what is available at that time. Switchgrass will also be planted along all of the restored streams at a rate of 5 lbs per acre. There will be at least an 80 percent survival rate of the woody stems planted used as a performance criteria. This will be monitored quarterly. All work will be done following the completion of mining and reclamation efforts.

This mitigation plan should be implemented within two (2) years of issuance of the permit. It is expected that mining will be completed within this time and upon completion of mining, the stream construction work can begin. The stream reconstruction should be completed within sixty (60) days of the time mining is completed. Weather and equipment problems could potentially delay the final reconstruction of the stream by a few days.

It is also proposed as part of the mitigation effort to clean up a garbage dump-site in Left Fork of Fugitt Creek, reconstruct in-stream habitat, and do riparian planting in the area.

This is proposed to lower the in-lieu-fee contained in this section. The amount lowered is to be determined.

GRESS ENGINEERING

TOTAL PROJECT SUMMARY

Summary Of Aquatic Resource Impacts And Mitigation Measures
Nally & Hamilton Enterprises
Mill Creek #4
USACE Project No. 200501310
DSMRE Permit No. 848-0211
DOW AI No. 77856

Impacts

Waters	Stream LFt.	Wetlands Ac.
Perennial	3441	-
Intermittent	2576	-
Ephemeral	928	-
Emergent	-	-

Type Of Impact

Waters	Stream LFt.	Wetlands Ac.
Filled	2746	-
Inundated	617	-
Excavated	3482	-
Indirect	100	-
Culvert	-	-

Mitigation

Waters	Stream LFt.	Wetlands Ac.
Perennial	4113	-
Intermittent	2576	-
Ephemeral	722	-
Emergent	-	-
Refuse Reclamation	-	-

In-Lieu Fee Compensatory Mitigation Calculator (Version 2002.8)

Ephemeral Streams

Project ID:	Mill Branch #4
Stream/Reach:	Unnamed Tributary to Left Fork Fugitt Creek

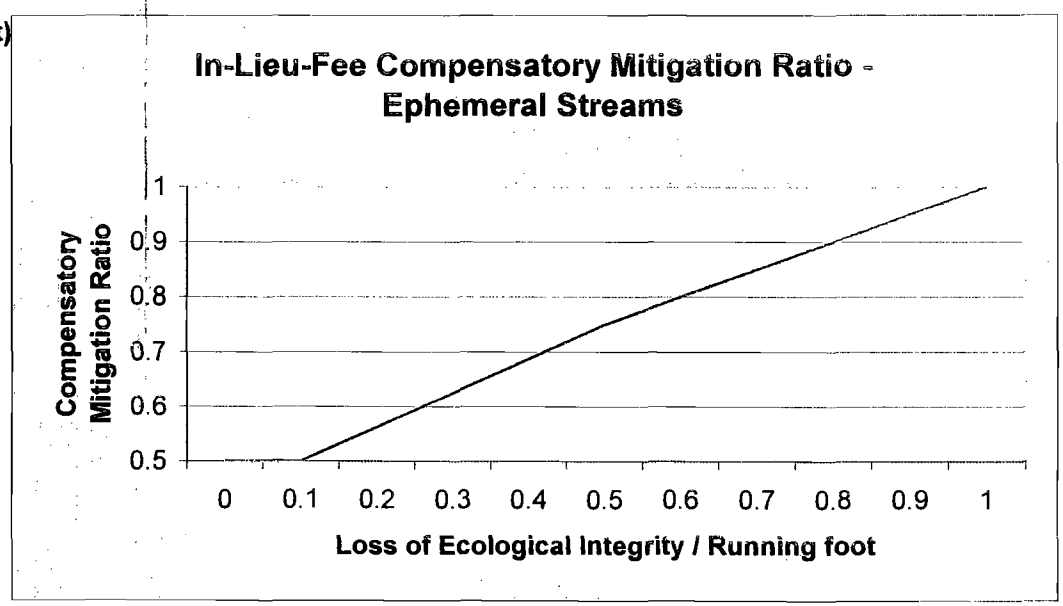
Loss of Ecological Integrity/running ft due to Project Impacts = 0.91 UNITS EII (0-1)

Impact Length = 200 (ft)

Compensatory Mitigation Ratio = 0.96

*In-Lieu Fee = $22,920.00

*(adjusted to offset cumulative impacts)



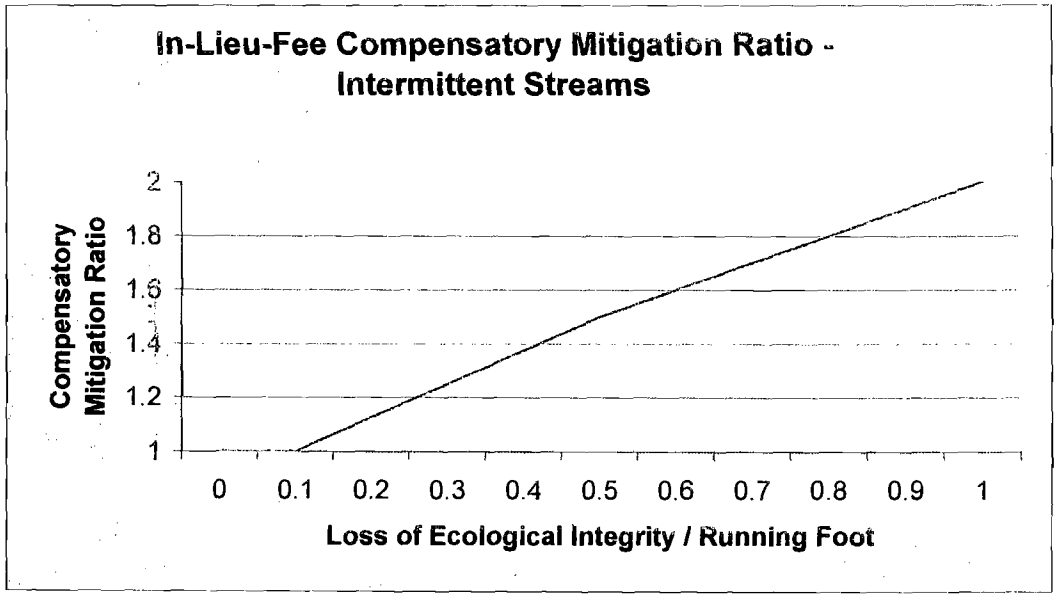
In-Lieu Fee Compensatory Mitigation Calculator (Version 2002.8)

Intermittent Streams

Project ID:	Mill Branch #4
Stream/Reach:	Unnamed Tributary to Left Fork Fugitt Creek

Loss of Ecological Integrity/running ft due to Project Impacts =	0.98	UNITS EII (0-1)
Impact Length =	396	(ft)
Compensatory Mitigation Ratio =	1.98	
*In-Lieu Fee =	$94,089.60	

*(adjusted to offset cumulative impacts)



In-Lieu Fee Compensatory Mitigation Calculator (Version 2002.8)

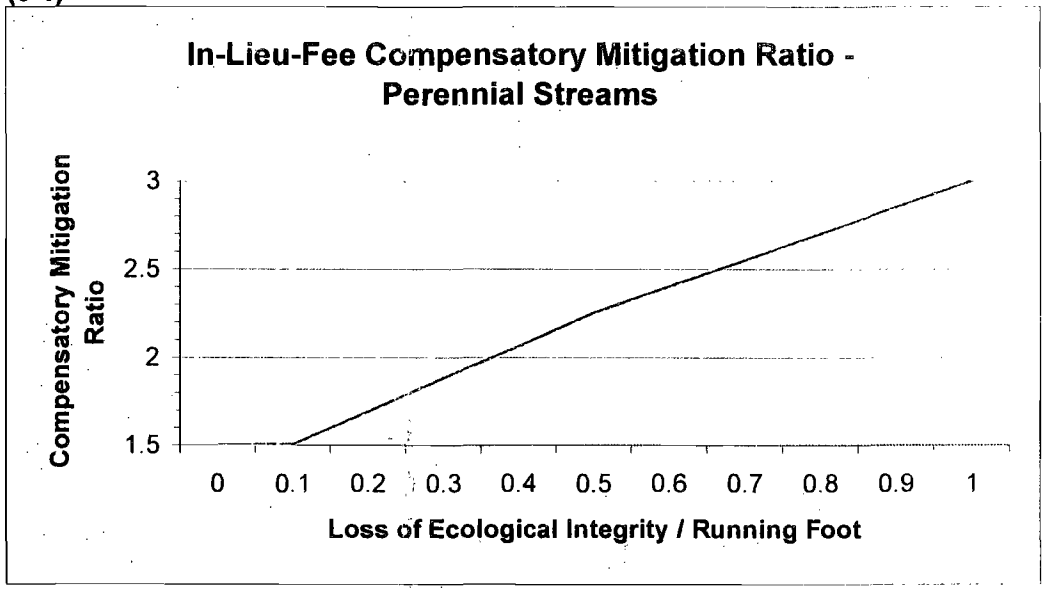
Perennial Streams

Project ID:

Stream/Reach:

Loss of Ecological Integrity/running ft due to Project Impacts =	0.36	UNITS EII (0-1)
Impact Length =	751	(ft)
Compensatory Mitigation Ratio =	1.99	
*In-Lieu Fee =	$179,113.50	

*(adjusted to offset cumulative impacts)



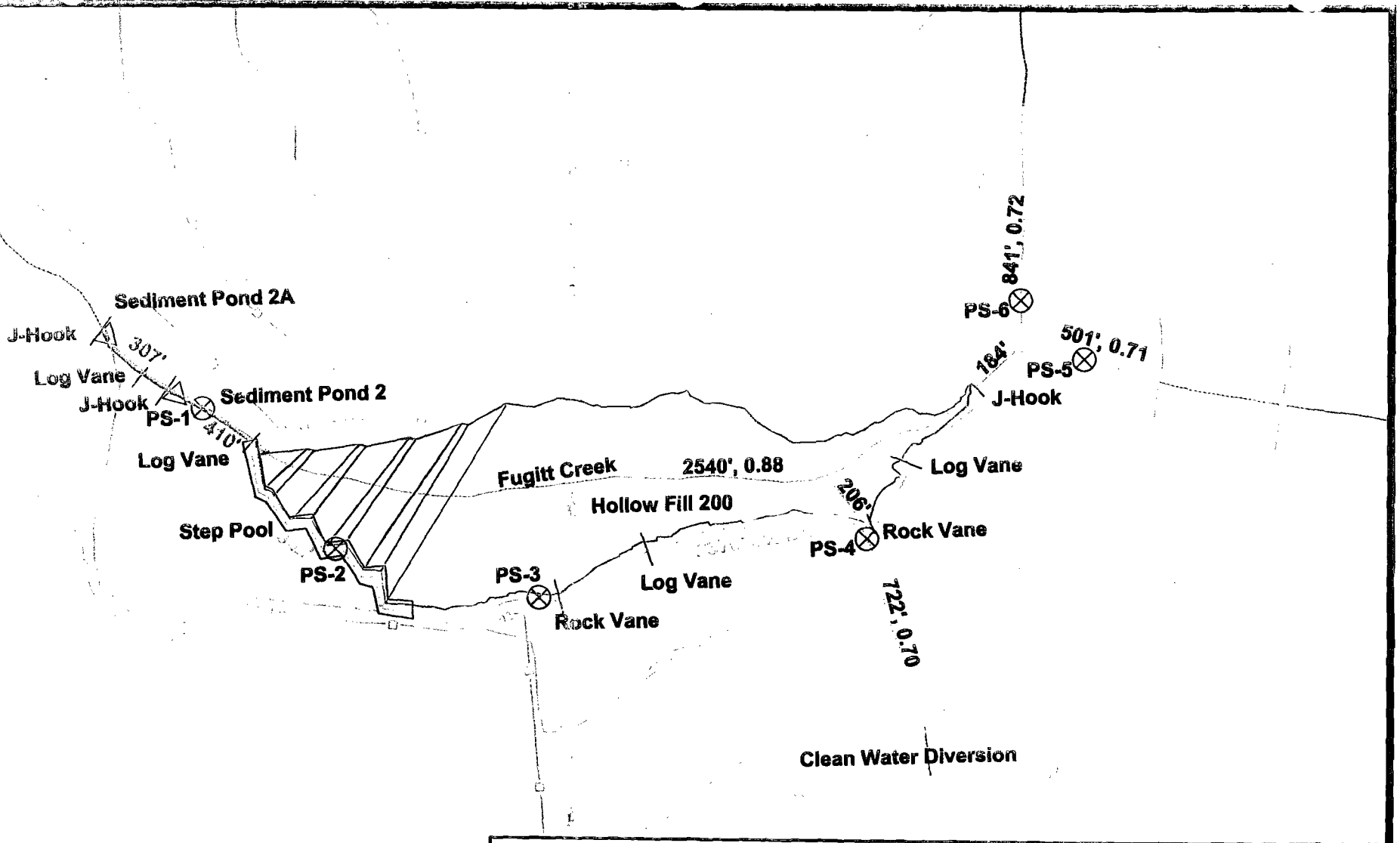


Photo Station
Lost Perennial Stream
Lost Intermittent Stream
Lost Ephemeral Stream
Restored stream at Hollow Fill 200
Restored stream between HF 200 and pond 2A
Restored stream at Pond 2 and 2A

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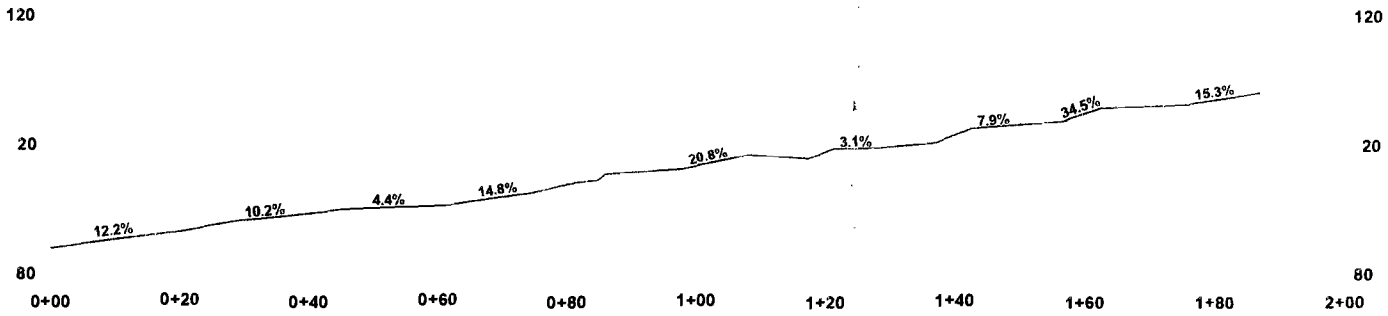
Restored Stream Areas for Mitigation at Hollow Fill 200, Pond 2 and 2A and stream reach between them, Harlan County, Kentucky.

SCALE: 1"=500' 6/1/06



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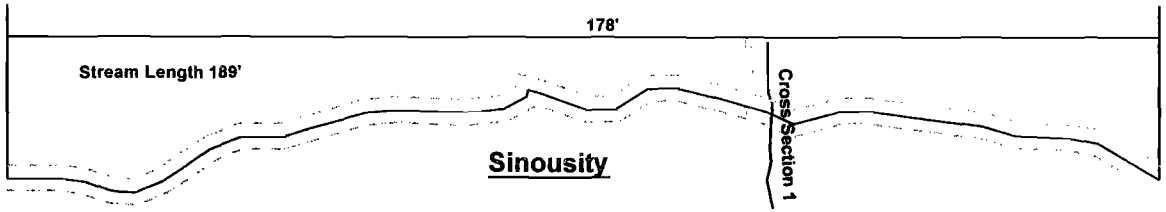

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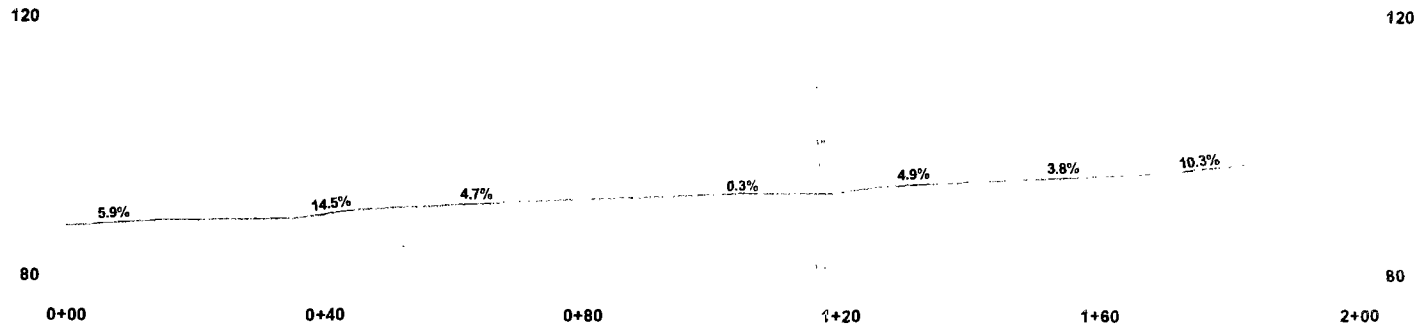
NALLY AND HAMILTON ENTERPRISES, INC.

Attachment 6. Longitudinal Profile of Mine Thru Area Harlan County, Kentucky

SCALE: 1"=30'

6/1/06



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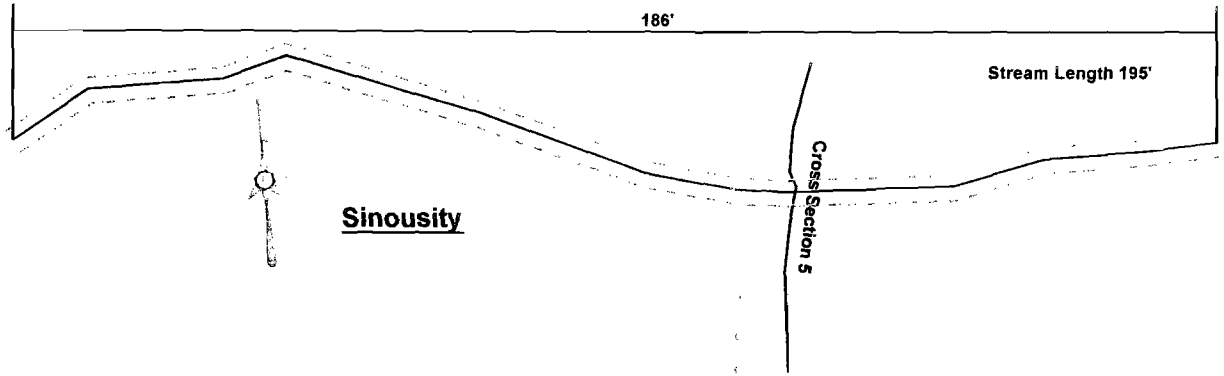

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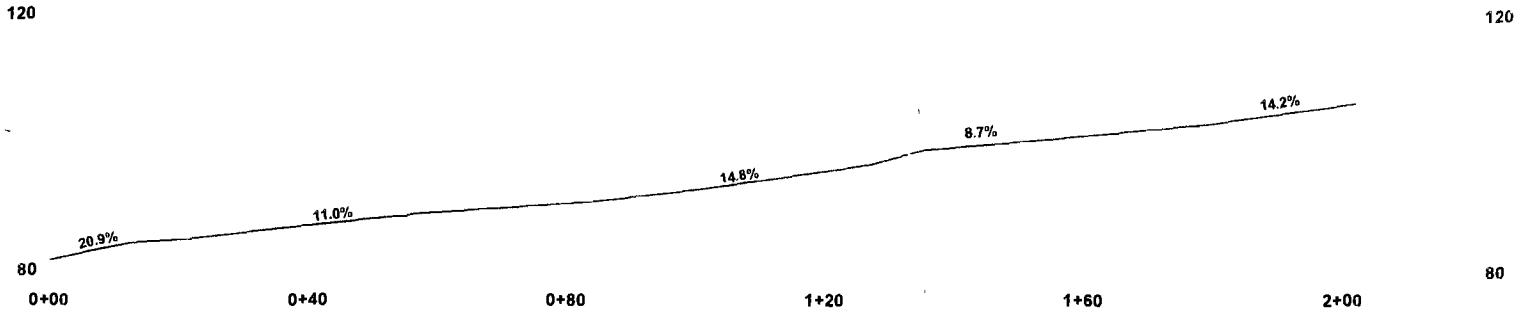
NALLY AND HAMILTON ENTERPRISES, INC.

Attachment 5. Longitudinal Profile of Mine Thru Area Harlan County, Kentucky

SCALE: 1"=30'

6/1/06



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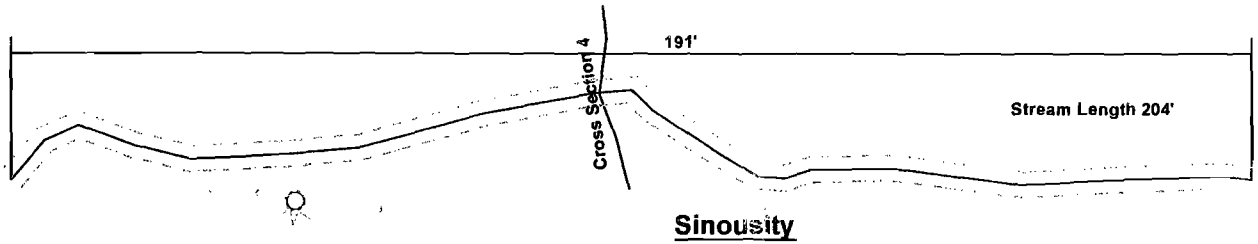

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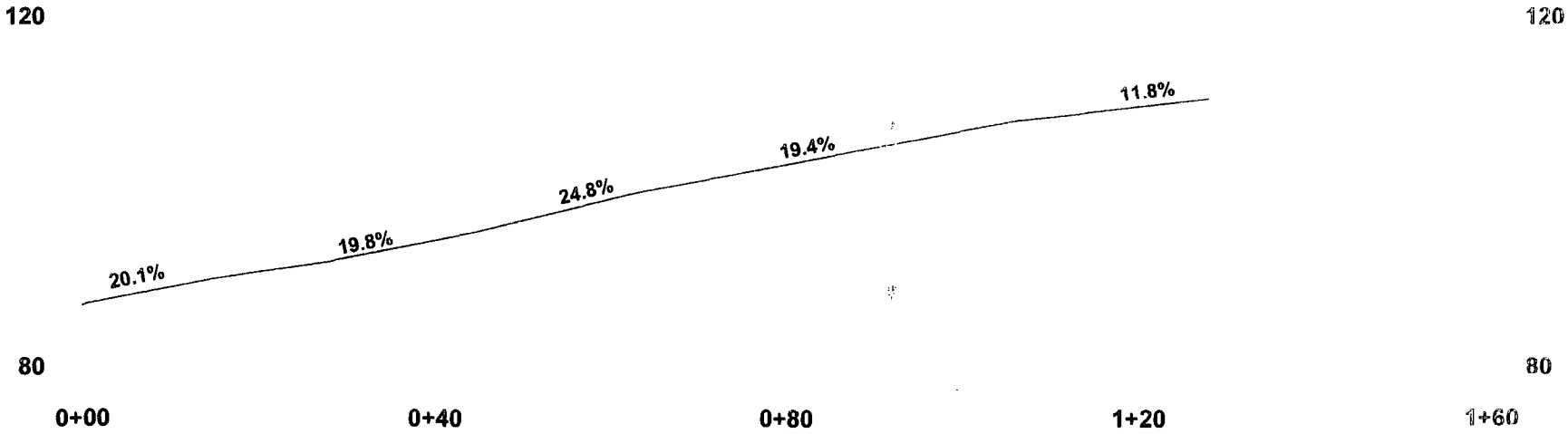
NALLY AND HAMILTON ENTERPRISES, INC.

Attachment 4. Longitudinal Profile of Hollow Fill 100 Harlan County, Kentucky

SCALE: 1"=30'

6/1/06



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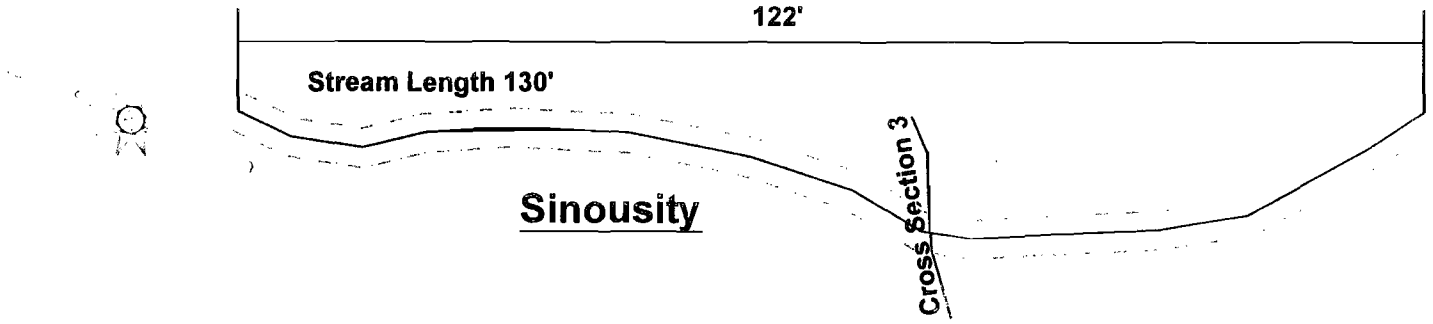

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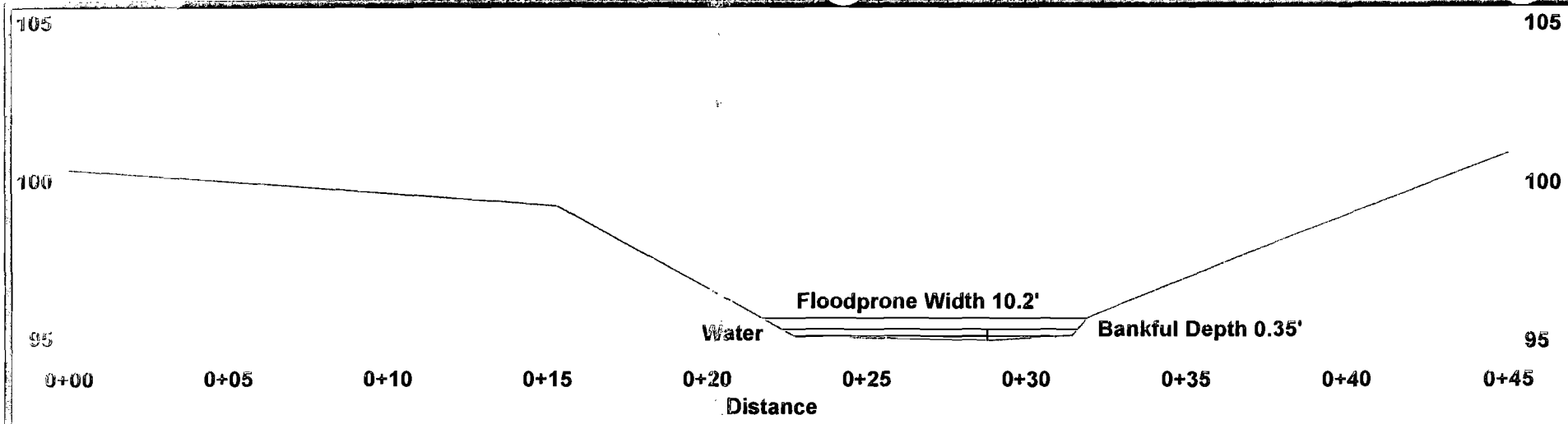
NALLY AND HAMILTON ENTERPRISES, INC.

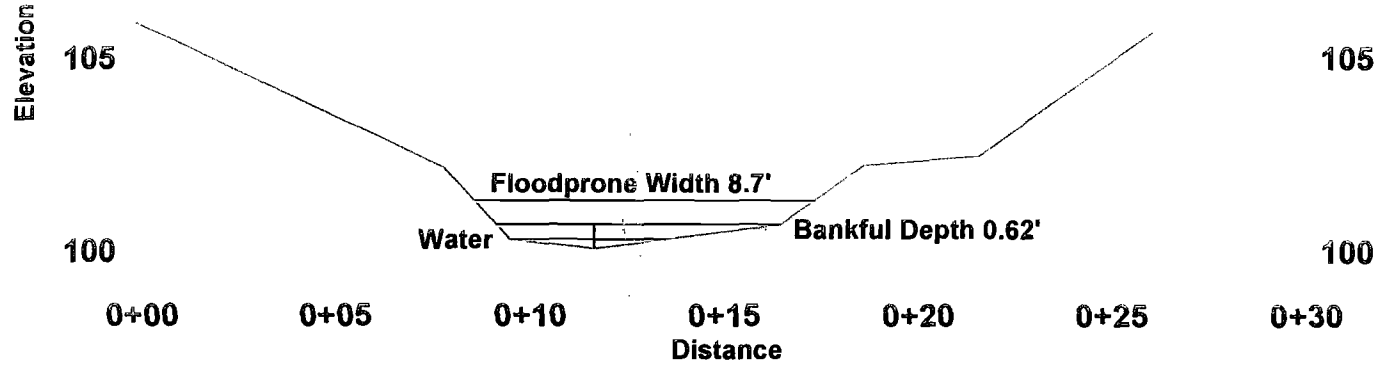
Attachment 3. Longitudinal Profile of Hollow Fill 100 Harlan County, Kentucky

SCALE: 1"=20'

6/1/06



Cross Section 5 Mine Thru Area



Cross Section 6 Mine Thru Area

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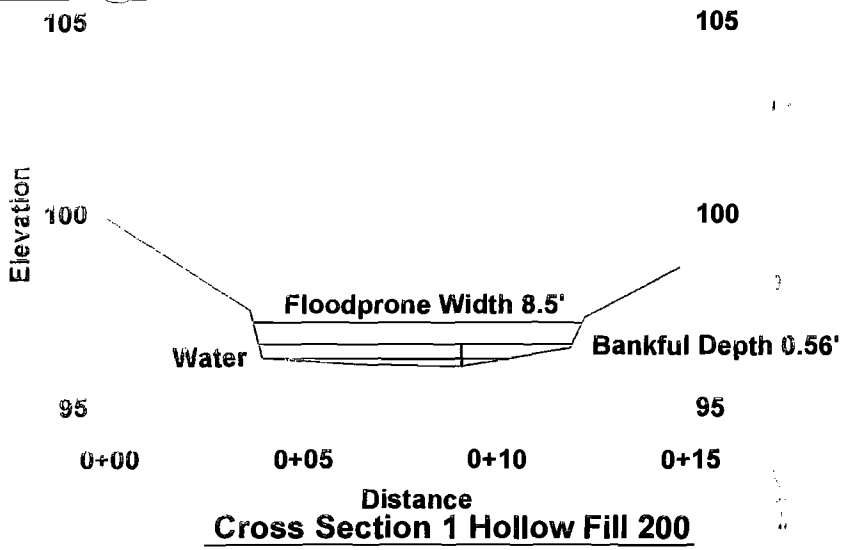
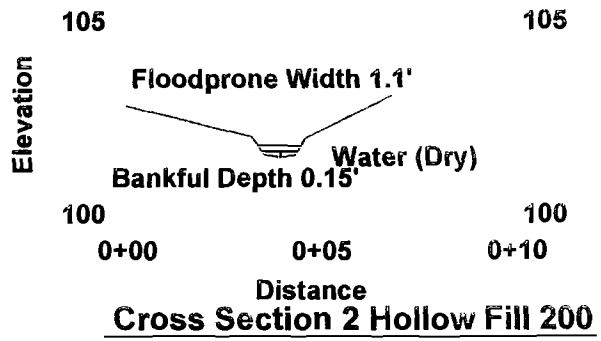
Cross Section
Attachment 2A

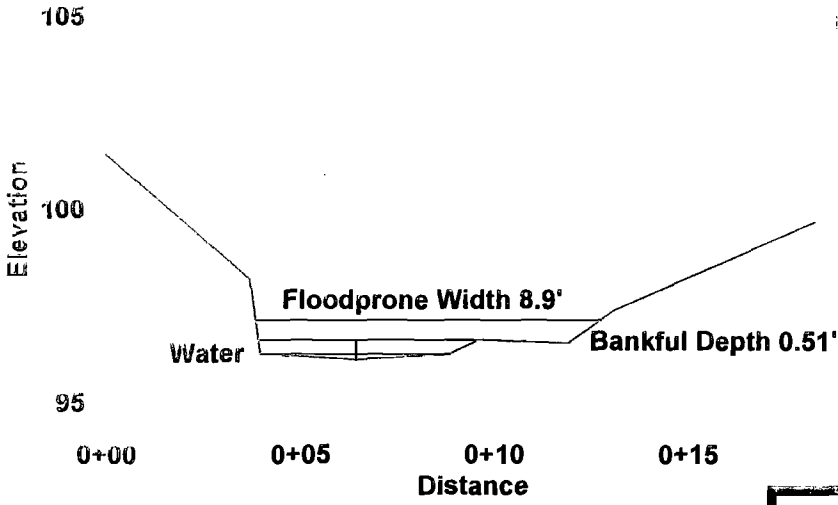
SCALE: 1"=5' | 6/1/06



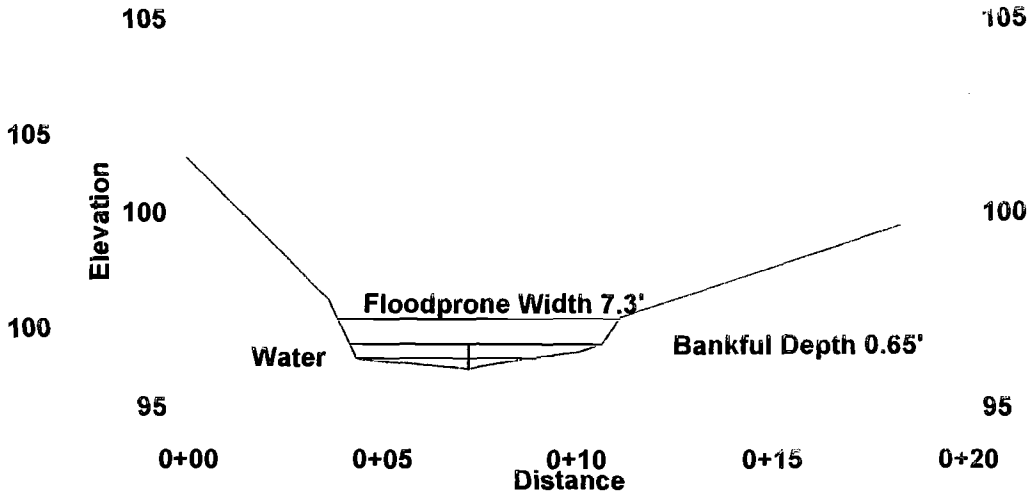
Cross Section 1 Hollow Fill 200



Cross Section 2 Hollow Fill 200



Cross Section 3 Hollow Fill 200



Cross Section 4 Hollow Fill 200

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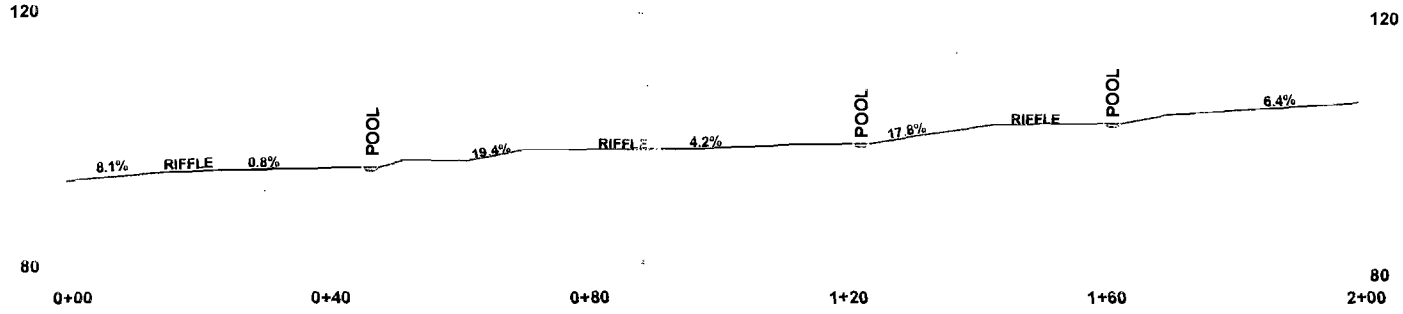
Cross Section
Attachment 1A

SCALE: 1"=5'

6/1/06



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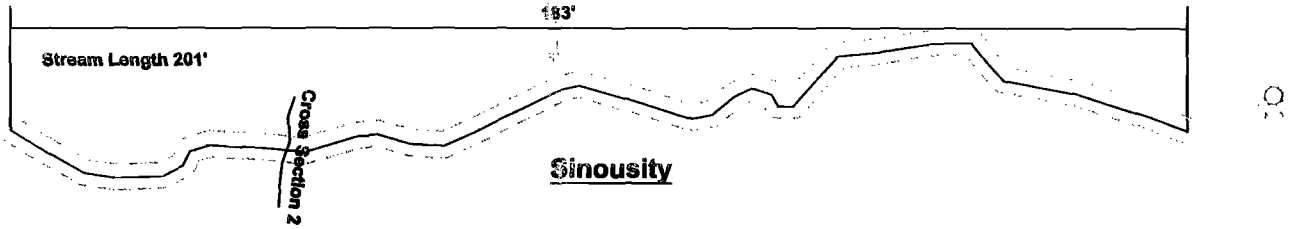

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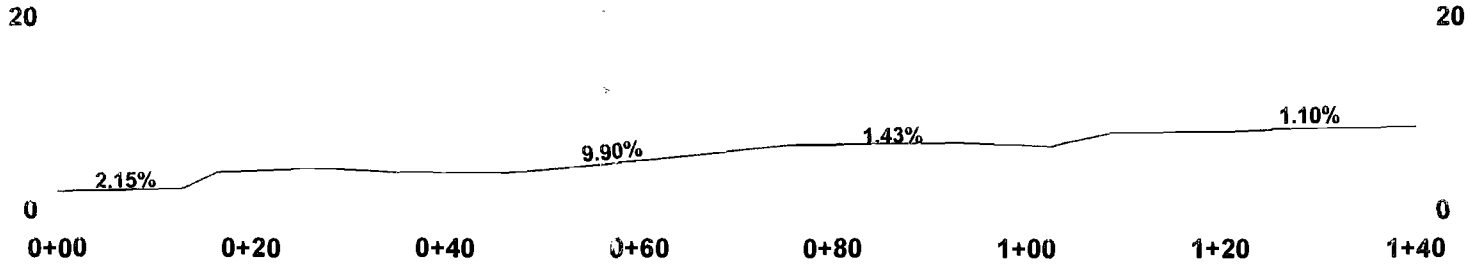
NALLY AND HAMILTON ENTERPRISES, INC.

Attachment 2. Longitudinal Profile of Hollow Fill 100 Harlan County, Kentucky

SCALE:	1"=30'	6/1/06



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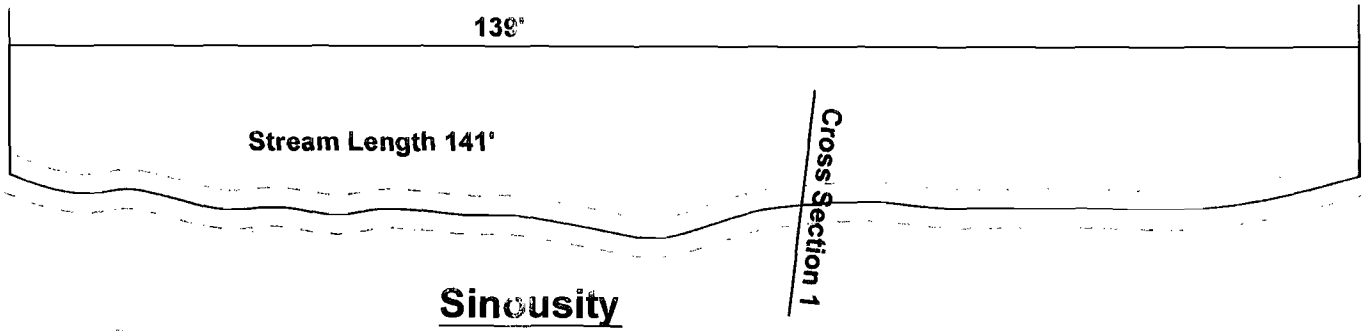

Sinuosity

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NALLY AND HAMILTON ENTERPRISES, INC.

Attachment 1. Longitudinal Profile of Hollow Fill 200 Harlan County, Kentucky

SCALE:	1"=20'	6/1/06

Leo Miller & Associates, Inc.
P.O. Box 488
Harlan, Kentucky 40831

June 2, 2006

Gress Engineering
P.O. Box 406
Appalachia, Virginia 24216

Robert Kiser:

Hollow Fill #200 has 4 ditch designs. Two on the top at 2% slope and two on the sides at 50% slopes. I found the hydrology calculations in the permit package for all four ditches. They used an older version of Sedcad to design the ditches and that version did not size the rock. I used their numbers for the flow and plugged them into the newer version of Sedcad so that I could get rock sizing. Ditch DD11 would not run with riprap because the new Sedcad indicates that the velocity is too great for riprap. I think they use a specific gravity for a lighter material, generally limestone, but the shot sandstone rock that we use is denser and heavier and does not wash like the limestone materials. I could have used something heavier like concrete rubble in the program but I noticed that in the permit it states riprap or cut in solid rock so I ran it using solid rock material. The newer Sedcad gives a slighter larger ditch than the old version but the difference is not that significant. If you're not familiar with the Sedcad program please note the following in how the program sizes rock. The rock sizing gives three values in the printout. The D50 indicates that 50% of the rock should be that size. The Dmin is the minimum size rock and the Dmax is the maximum size rock. 50% of the rock can consist of rock sized as Dmin and Dmax combined.

Please let me know if I can be of any further assistance.

Thank you,

Denham York

LEO MILLER & ASSOCIATES, INC.

(606) 573-4300 P.O. BOX 488 HARLAN, KENTUCKY 40831 FAX (606) 573-6722

June 2, 2006

Gress Engineering
P.O. Box 406
Appalachia, Virginia 24216

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I'm sending the original hollow fill plan view with their mitigation plans on it. This is primarily for your use. I think it would only complicate things if it were submitted to the Division of Water or the Corps at this time. Of course if they were to request it we would probably need to provide it to them.

Give me a call if you have any questions.

Thank you,

Denham York

Denham York

Nally & Hamilton Enterprises, Inc. #848-0211, Mill Branch #4 Channel Design Left Fork

100 Year 24 Hour Storm

HDY

Leo Miller & Associates, Inc.
P.O. Box 488
Harlan, Ky. 40831

Phone: 606-573-4300
Email: millerengr@harlanonline.net

General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	6.100 inches

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	246.590	246.590	391.85	65.21

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	242.400	0.197	0.000	0.000	73.000	S	389.09	64.069
	2	4.190	0.018	0.000	0.000	74.000	F	14.26	1.141
	Σ	**246.590**						**391.85**	**65.211**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	28.00	140.00	500.00	1.330	0.104
		8. Large gullies, diversions, and low flowing streams	13.48	500.00	3,710.00	11.010	0.093
#1	**1**	**Time of Concentration:**					**0.197**
#1	2	3. Short grass pasture	39.39	130.00	330.00	5.020	0.018
#1	**2**	**Time of Concentration:**					**0.018**

Nally & Hamilton #848-0211, Left Fork

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
8.00	1.5:1	1.5:1	17.0	0.30		

PADER Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	391.85 cfs	
Depth:	2.35 ft	2.65 ft
Top Width:	15.04 ft	15.94 ft
Velocity:	14.49 fps	
X-Section Area:	27.03 sq ft	
Hydraulic Radius:	1.642	
Froude Number:	1.91	
Manning's n:	0.0590	
Dmin:	12.00 in	
D50:	15.00 in	
Dmax:	24.00 in	

Nally & Hamilton Enterprises, Inc.
#848-0211, Mill Branch #4
Channel Design Left Fork (Un-Named)

100 Year 24 Hour Storm

HDY

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P.O. Box 488
Harlan, Ky. 40831

Phone: 606-573-4300
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General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	6.100 inches

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	86.550	86.550	134.22	22.91

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	81.970	0.202	0.000	0.000	73.000	S	130.55	21.666
	2	4.580	0.021	0.000	0.000	74.000	F	15.58	1.248
	Σ	**86.550**						**134.22**	**22.913**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	11.00	55.00	500.00	0.830	0.167
		8. Large gullies, diversions, and low flowing streams	22.95	420.00	1,830.00	14.370	0.035
#1	**1**	**Time of Concentration:**					**0.202**
#1	2	3. Short grass pasture	31.43	110.00	350.00	4.480	0.021
#1	**2**	**Time of Concentration:**					**0.021**

Nally & Hamilton #848-0211, Left Fork (Un-Named)

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
4.00	1.5:1	1.5:1	14.0	0.30		

PADER Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	134.22 cfs	
Depth:	1.75 ft	2.05 ft
Top Width:	9.25 ft	10.15 ft
Velocity:	11.59 fps	
X-Section Area:	11.58 sq ft	
Hydraulic Radius:	1.124	
Froude Number:	1.82	
Manning's n:	0.0520	
Dmin:	7.00 in	
D50:	12.00 in	
Dmax:	18.00 in	

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #8

by

Name: BNH

Company Name: Cumberland Valley Engineering
File Name: C:\SEDCAD3\0179DD8

Date: 03-13-1997

Company Name: Cumberland Valley Engineering
Filename: C:\SEDCAD3\0179DD8 User: BNH
Date: 03-13-1997 Time: 12:07:16
APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #8
Storm: 6.10 inches, 100 year-24 hour, SCS Type I
Hydrograph Convolution Interval: 0.1 hr

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

					-Hydrology-					
JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base-Flow (cfs)	Runoff Volume (ac-ft)	Peak Disch (cfs
111	1	28.00	55	S	0.167	0.171	0.248	0.0	3.68	9.
111	2	0.41	86	F	0.067	0.069	0.185	0.0	0.15	0.
111	3	3.00	86	F	0.042	0.040	0.362	0.0	1.13	6.
111	4	3.83	86	F	0.014	0.014	0.357	0.0	1.44	8.
111	5	1.46	86	F	0.386	0.399	0.185	0.0	0.55	2.
111	6	5.61	79	F	0.394	0.392	0.185	0.0	1.76	8.
111	7	1.73	79	F	0.082	0.084	0.185	0.0	0.54	3.
111	8	5.62	55	S	0.205	0.204	0.242	0.0	0.74	1.
111	9	2.14	86	F	0.009	0.009	0.403	0.0	0.80	4.
111	10	0.82	86	F	0.014	0.015	0.185	0.0	0.31	1.
111	11	1.06	86	F	0.004	0.004	0.403	0.0	0.40	2.
111	12	1.96	74	F	0.036	0.026	0.403	0.0	0.53	3.
111	13	1.91	55	S	0.101	0.000	0.000	0.0	0.25	1.
	Type: Nonerodible Channel Label: DIVERSION DITCH #8									
111	Structure	57.55							12.28	
111	Total IN/OUT	57.55							12.28	42.

Nally & Hamilton #848-0211, Fill 200, Side Ditch DD8

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
0.00	2.0:1	2.0:1	50.0	0.30		

PADER Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	42.38 cfs	
Depth:	1.34 ft	1.64 ft
Top Width:	5.38 ft	6.58 ft
Velocity:	11.73 fps	
X-Section Area:	3.61 sq ft	
Hydraulic Radius:	0.601	
Froude Number:	2.52	
Manning's n:	0.0640	
Dmin:	7.00 in	
D50:	12.00 in	
Dmax:	18.00 in	

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #9

by

Name: BNH

Company Name: Cumberland Valley Engineering
File Name: C:\SEDCAD3\0179DD9

Date: 03-13-1997

Company Name: Cumberland Valley Engineering
Filename: C:\SEDCAD3\0179DD9 User: BNH
Date: 03-13-1997 Time: 11:37:36
APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #9
Storm: 6.10 inches, 100 year-24 hour, SCS Type I
Hydrograph Convolution Interval: 0.1 hr

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

			-Hydrology-								
JBS	SWS		Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base-Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111	1		28.00	55	S	0.167	0.171	0.248	0.0	3.68	9.62
111	2		0.41	86	F	0.067	0.069	0.185	0.0	0.15	0.92
111	3		3.00	86	F	0.042	0.040	0.362	0.0	1.13	6.71
111	4		3.83	86	F	0.014	0.014	0.357	0.0	1.44	8.56
111	5		1.46	86	F	0.386	0.399	0.185	0.0	0.55	2.72
111	6		5.61	79	F	0.394	0.392	0.185	0.0	1.76	8.57
111	7		1.73	79	F	0.082	0.000	0.000	0.0	0.54	3.30
		Type: Nonerodible Channel Label: DIVERSION DITCH #9									
111	Structure		44.04							9.25	
111	Total IN/OUT		44.04							9.25	28.16

Nally & Hamilton #848-0211, Fill 200, Side Ditch DD9

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
0.00	2.0:1	2.0:1	2.0	0.30		

PADER Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	28.16 cfs	
Depth:	1.68 ft	1.98 ft
Top Width:	6.73 ft	7.93 ft
Velocity:	4.98 fps	
X-Section Area:	5.66 sq ft	
Hydraulic Radius:	0.752	
Froude Number:	0.96	
Manning's n:	0.0350	
Dmin:	2.00 in	
D50:	3.00 in	
Dmax:	4.50 in	

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #10

by

Name: BNH

Company Name: Cumberland Valley Engineering
File Name: C:\SEDCAD3\HF200NEW

Date: 01-22-1998

Company Name: Cumberland Valley Engineering
Filename: C:\SEDCAD3\HF200NEW User: BNH
Date: 01-22-1998 Time: 12:50:33
APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #10
Storm: 6.10 inches, 100 year-24 hour, SCS Type II
Hydrograph Convolution Interval: 0.1 hr

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

-Hydrology-

JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base-Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111	1	366.23	55	S	0.372	0.305	0.256	0.0	48.09	194.76
111	2	15.36	95	F	0.018	0.018	0.227	0.0	7.05	70.67
111	3	5.92	79	F	0.207	0.208	0.185	0.0	1.86	20.34
111	4	0.50	79	F	0.063	0.015	0.405	0.0	0.16	1.87
111	5	6.73	79	F	0.049	0.048	0.394	0.0	2.11	25.14
111	6	1.05	95	F	0.314	0.301	0.185	0.0	0.48	4.34
111	7	5.88	79	F	0.333	0.072	0.185	0.0	1.85	17.82
111	8	4.06	79	F	0.094	0.000	0.000	0.0	1.28	15.17
Type: Nonerodible Channel Label: DIVERSION DITCH #10										
111	Structure	405.73							62.87	
Total IN/OUT		405.73							62.87	222.42

Nally & Hamilton #848-0211, Fill 200, Side Ditch DD10

Material: Riprap

Triangular Channel

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
2.0:1	2.0:1	2.0	0.30		

PADER Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	222.42 cfs	
Depth:	3.80 ft	4.10 ft
Top Width:	15.21 ft	16.41 ft
Velocity:	7.70 fps	
X-Section Area:	28.90 sq ft	
Hydraulic Radius:	1.700	
Froude Number:	0.98	
Manning's n:	0.0390	
Dmin:	3.00 in	
D50:	6.00 in	
Dmax:	9.00 in	

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #11

by

Name: BNH

Company Name: Cumberland Valley Engineering
File Name: C:\SEDCAD3\HF200NW2

Date: 01-22-1998

Company Name: Cumberland Valley Engineering
Filename: C:\SEDCAD3\HF200NW2 User: BNH
Date: 01-22-1998 Time: 13:11:06
APOGEE COAL COMPANY, #848-0179, DIVERSION DITCH #11
Storm: 6.10 inches, 100 year-24 hour, SCS Type II
Hydrograph Convolution Interval: 0.1 hr

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

-Hydrology-

JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base-Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharg (cfs)
111	1	134.20	55	S	0.216	0.312	0.242	222.4	17.62	97.89
111	2	0.48	95	F	0.205	0.198	0.185	0.0	0.22	2.16
111	3	5.92	79	F	0.207	0.208	0.185	0.0	1.86	20.34
111	4	0.50	79	F	0.063	0.025	0.405	0.0	0.16	1.87
111	5	6.73	79	F	0.049	0.048	0.394	0.0	2.11	25.14
111	6	1.05	95	F	0.314	0.301	0.185	0.0	0.48	4.34
111	7	5.88	79	F	0.333	0.072	0.185	0.0	1.85	17.82
111	8	4.06	79	F	0.094	0.087	0.234	0.0	1.28	15.17
111	9	1.72	74	F	0.091	0.026	0.403	0.0	0.47	5.77
111	10	2.60	55	S	0.094	0.000	0.000	0.0	0.34	4.57
Type: Nonerodible Channel Label: DIVERSION DITCH #11										
	Structure	163.14							26.39	
	Total IN/OUT	163.14							26.39	339.32

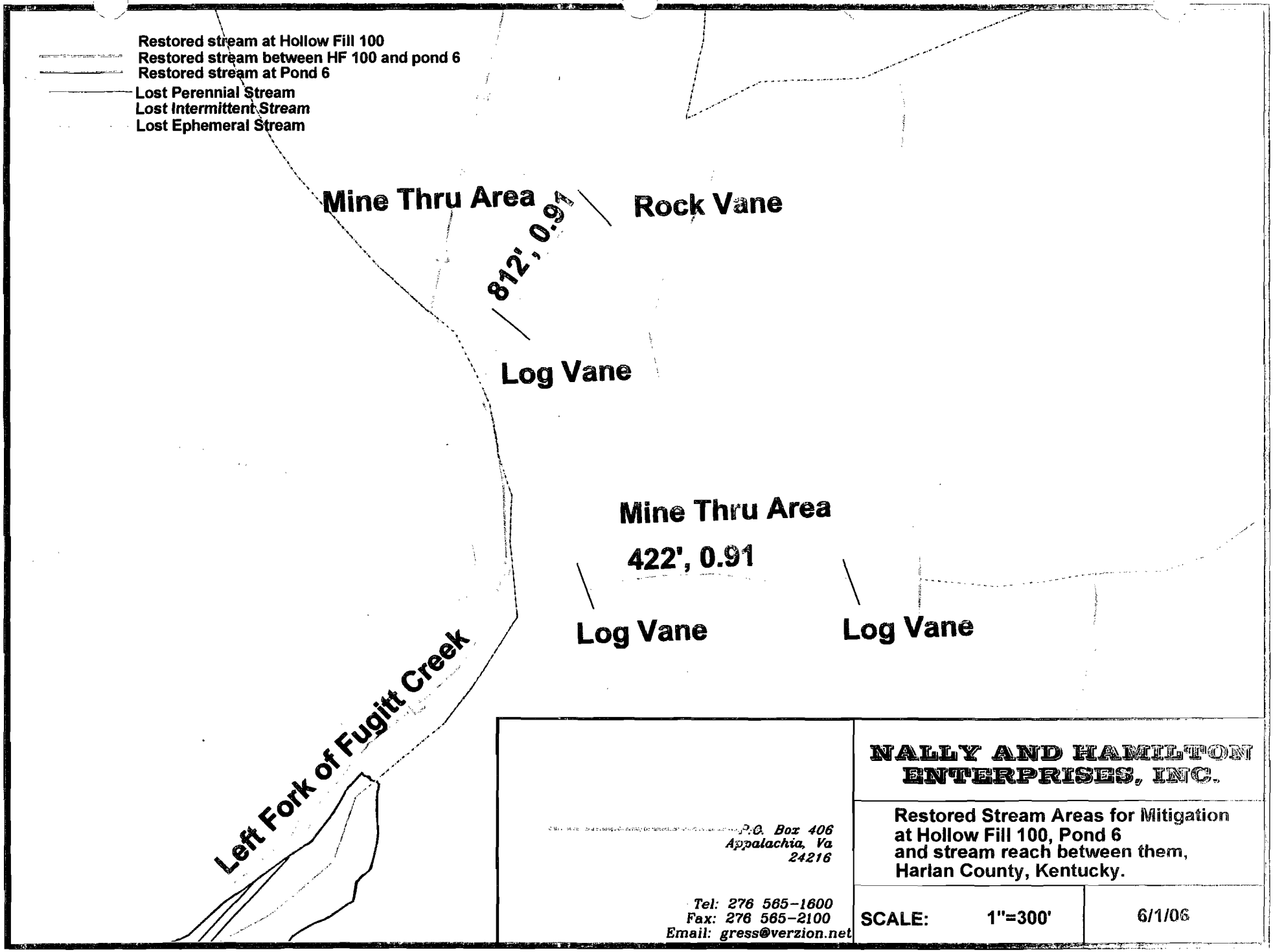
Nally & Hamilton #848-0211, Fill 200, Side Ditch DD11

Material: Cut in Rock

Triangular Channel

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
2.0:1	2.0:1	50.0	0.0300	0.30		

	w/o Freeboard	w/ Freeboard
Design Discharge:	339.32 cfs	
Depth:	2.21 ft	2.51 ft
Top Width:	8.83 ft	10.03 ft
Velocity:	34.82 fps	
X-Section Area:	9.75 sq ft	
Hydraulic Radius:	0.987	
Froude Number:	5.84	



P.O. Box 406
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24216

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Email: gress@verzion.net

NALLY AND HAMILTON ENTERPRISES, INC.

Restored Stream Areas for Mitigation at Hollow Fill 100, Pond 6 and stream reach between them, Harlan County, Kentucky.

SCALE: 1"=300'

6/1/06

KY DOW Calculations

In-Lieu Fee Compensatory Mitigation Calculator (Version 2002.8)

Perennial Streams

Project ID: Nally and Hamilton, Mill Branch #4, DNR 848-0211

Stream/Reach: Fugitt Creek Perennial impacts from sediment ponds

Loss of Ecological Integrity/running ft due to Project Impacts =	0.96	UNITS EII (0-1)
Impact Length =	1266	(ft)
Compensatory Mitigation Ratio =	2.94	
*In-Lieu Fee =	$446,644.80	

*(adjusted to offset cumulative impacts)